SIX NEW SPECIES OF NEOTROPICAL LAURACEAE[1]

HENK VAN DER WERFF[2]

ABSTRACT

Among recent collections of Lauraceae and older collections received on loan from various herbaria, several undescribed species were found. Six of those, *Aiouea inconspicua* van der Werff, *Licaria bracteata* van der Werff, *Phoebe glabra* van der Werff, *Pleurothyrium costanense* van der Werff, *P. grandiflorum* van der Werff, and *P. westphalii* van der Werff, are described. Difficulties with the generic placements of these new species are discussed.

Lauraceae, comprising about 40 predominantly tropical genera, are rich in species in the Neotropics. The majority of the species have small, inconspicuous flowers. Genera are often hard to recognize and nearly all are in need of modern treatments.

During identification of the large number of unidentified Lauraceae in MO and among the various loans I received, several undescribed species were found. Of those, the following six are here described as new.

AIOUEA AUBLET

Aiouea, recently monographed by Renner (1982), comprises about 20 neotropical species and is best represented in Brazil, Venezuela, and the Guianas.

Having seen specimens of most species attributed to *Aiouea,* it seems quite likely to me that *Aiouea,* as circumscribed by Renner (1982) and accepted here, is polyphyletic. Most of the South American species (including the type species) have a typical aspect, with large, many-flowered inflorescences, flowers with rather long pedicels, leaves drying greenish, and twigs with smooth bark. The Central American species look quite different but key to *Aiouea* because of their nine 2-celled anthers; they do not fit in the other, better defined, neotropical genera with nine 2-celled anthers. Because some Central American species show a striking resemblance to sympatric *Ocotea* species, it is quite well possible that the Central American *Aiouea* species are derived from local *Ocotea* or *Nectandra* species which have lost two of their four anther cells. Variation in the number of anther cells in *Aiouea lundelliana* Allen, a species excluded from *Aiouea* by Renner (1982), has been reported earlier (van der Werff, 1984). A study of the wood anatomy could probably answer the question whether these *Aiouea* species share more characters with the South American *Aiouea* species or with Central American *Ocotea* or *Nectandra* species.

Aiouea inconspicua van der Werff, sp. nov. TYPE: Mexico. Vera Cruz: 0–2 km S del campamento Hnos. Cedillo, rumbo a Río Alegre, por la desviacíon al E, Hidalgotitlan, 140 m, 22 Apr. 1974, *Brigada Dorantes 2929* (holotype, MO; isotypes, MO, BM, UC). Figure 1.

Frutex vel arbor parva. Ramuli tenues, teretes, juniores minute tomentelli, vetustiores glabrescentes. Folia alterna, lanceolata (8–11 × 2–3 cm), chartacea, base acuta, apice acuminata vel caudata, subtus sub lente minute immersa punctata, penninervia, nervis arcuatis prominentibusque. Venatio camptodroma accedens brochidodroma. Laminae supra costam minute tomentellae vel glabrae, subtus praeter nervorum axillas barbellatas glabrae, sicco olivaceae praeter nervos virides. Inflorescentiae axillares, minute tomentellae, ad 4 cm longae, pauciflorae. Flores glabri, infundibuliformes. Tepala 6, aequalia, ovata vel transverse ovata, concava. Stamina fertilia 9, bilocellata, ca. 0.9 mm longa; 6 exteriora introrsa, 3 interiora extrorsa et basi filamentorum glandulis binis aucta. Staminodia absentia. Ovarium glaberrimum stigmate crasso sessilique. Bacca globosa, 1.5 cm diametro, basi cupulae planae, in pedicellum clavatim attenuatae insidens, tota exserta.

Shrub to 7 m tall. Twigs terete, glabrous; young twigs minutely tomentellous. Terminal buds slender, greyish pubescent. Leaves alternate, 8–11 cm long, 2–3 cm wide; lamina chartaceous, lanceolate, with numerous small gland dots, the base acute, plane, the apex acute or caudate, with a slender tip 1 cm long, the margin thickened

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[1] I thank the curators of A, BM, BR, GH, U, UC, US, and VEN for the often large loans that I received. Dr. J. Dwyer kindly checked the Latin. John Myers made the illustrations. The designation CORO is used for the herbarium of the Proyecto Flora Falcón in Coro, Venezuela.

[2] Department of Botany, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri, 63166-0299, U.S.A.

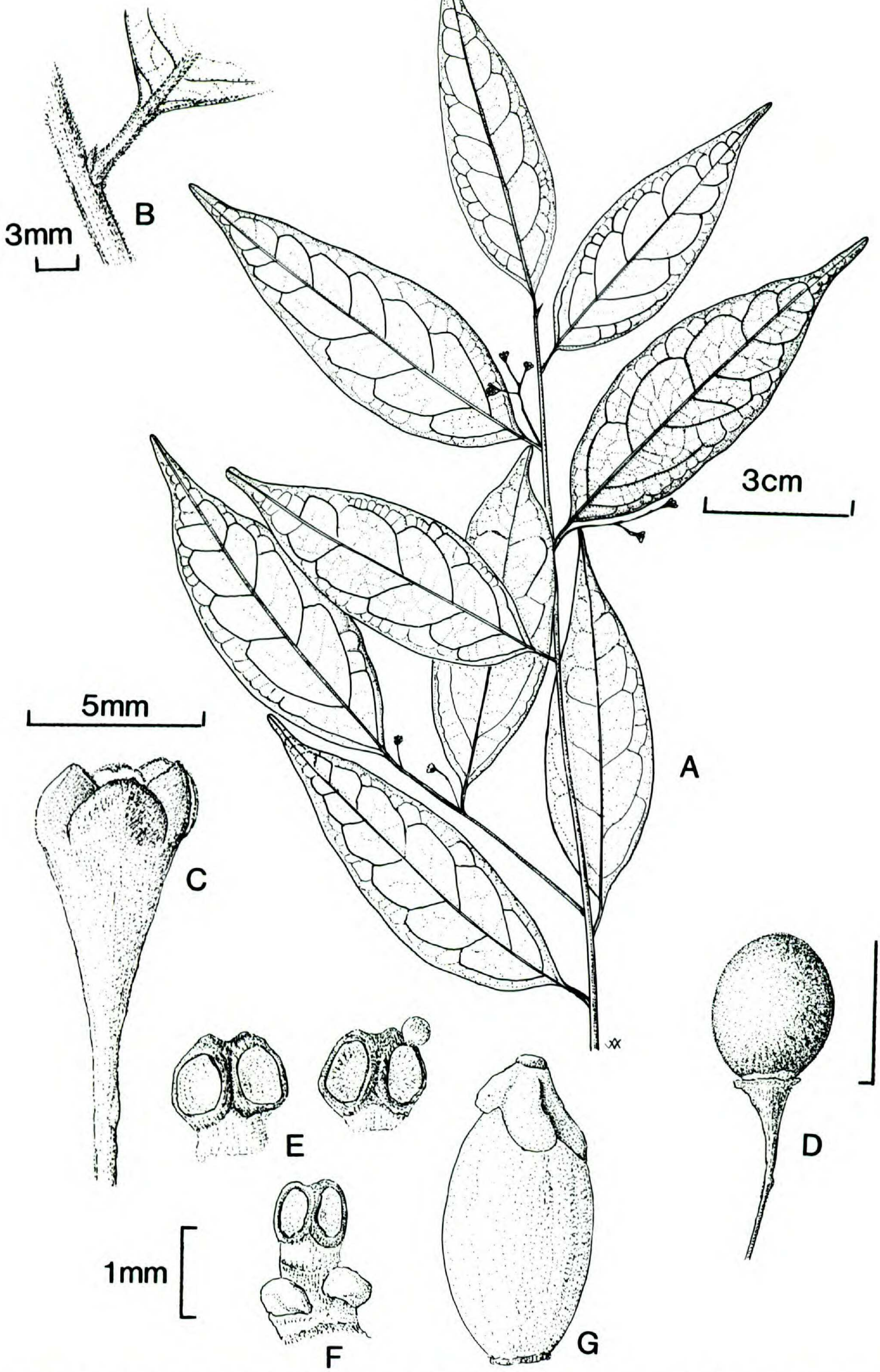

FIGURE 1. *Aiouea inconspicua*.—A. Habit.—B. Detail of twig.—C. Flower.—D. Fruit.—E. Two outer anthers.—F. Inner anther with basal glands.—G. Ovary and stigma.

and cartilaginous, glabrous below with the exception of small tufts of hair at the bases of the lowermost lateral veins, puberulous above on the midveins of young leaves, otherwise glabrous; lateral veins 4–6 pairs, slightly raised below and lighter than the leaf tissue, not reaching the margins but forming conspicuous arches ca. 3 mm from margin; tertiary venation reticulate, slightly raised on upper and lower surface. Inflorescences in axils of deciduous (rarely persistent) leaves, minutely tomentellous, to 4 cm long, few-flowered (4–7 flowers per inflorescence in material seen). Flowers greenish white, funnel-shaped, glabrous, with small terminal openings revealing the anthers, the pedicels 2–3 mm long. Tepals 6, equal or the outer 3 slightly shorter than the inner ones, roundish or slightly wider than long (0.9–1.2 × 1.2–1.4 mm), concave. Fertile stamens 9, ca. 0.9 mm long; anthers 0.3 mm long, with gland dots, all with 2 anther cells, these filling the entire anther; outer 6 anthers with introrse cells, the inner 3 with extrorse cells; filaments 0.6 mm long, as wide as anthers, pubescent; filaments of the inner 3 stamens with two basal glands. Ovary 1 mm long, elliptic, glabrous; style lacking, the stigma sessile, large, 0.4 mm wide. No staminodia seen. Fruit round, 1.5 cm diam. Cupule a shallow disc, ca. 8 mm diam., gradually narrowed into the pedicel.

Additional specimens examined. MEXICO. VERACRUZ: Hidalgotitlan, Río Solosuchil entre Hnos. Cedillo y la Escuadra, 11 Sept. 1974 (fl.), *Brigada Vazquez 1368* (MO); Hidalgotitlán, lomita pedregosa caliza al E de la estacíon de luz, 23 Feb. 1981 (fl, fr), *Wendt, Villalobos, Anguiano, González y Nararrete 2921* (MO). GUATEMALA. DEPT. ALTA VERAPAZ: Cerro Chinajá, 150–700 m, 1–2 Apr. 1942 (sterile), *Steyermark 45578* (A).

Aiouea inconspicua represents the first *Aiouea* species reported from Mexico. It resembles most closely *A. guatemalensis* (Lundell) Renner, known only from Guatemala. The most striking differences between the two species are listed in Table 1. In addition, *A. guatemalensis* has longer, wider leaves than *A. inconspicua,* and the leaves dry dark green with contrasting lighter venation in *A. inconspicua,* a feature lacking in *A. guatemalensis.*

An unusual feature of *A. inconspicua* is the absence of staminodia. In both earlier generic keys for Lauraceae (Kostermans, 1957; Hutchinson, 1964) and by Renner (1982) presence of staminodia was considered a characteristic feature of *Aiouea,* although Renner (1982) mentioned two exceptions. Because other lauraceous genera (*Ocotea, Nectandra*) include species with and without staminodia, I do not see the absence of staminodia in *A. inconspicua* as an obstacle for its inclusion in *Aiouea.*

TABLE 1. Selected characters of *Aiouea inconspicua* and *A. guatemalensis.*

	A. inconspicua	*A. guatemalensis*
Young twigs + terminal bud	puberulous	glabrous
Staminodes	lacking	present (teste Renner, 1982)
Axillary tufts of hairs in lowermost veins	present	absent
Leaf texture	chartaceous	chartaceous-coriaceous

Two of the collections were distributed by the Flora Veracruz project and may be present in several additional herbaria: *Brigada Dorantes 2929* was distributed as *Nectandra salicifolia* HBK and *Brigada Vazquez 1368* as *Nectandra sanguinea* Rolander ex Rottboel. The Steyermark collection was distributed as *Ocotea effusa* (Meissner) Hemsley.

LICARIA AUBLET

The genus *Licaria,* endemic to the Neotropics, was recently monographed by Kurz (1983), who recognized about 40 species ranging from southern Florida to southern Brazil. Among the neotropical Lauraceae, *Licaria* can be recognized readily based on its three 2-celled stamens, double-rimmed cupule, and alternate (rarely opposite, never clustered) leaves.

Licaria bracteata van der Werff, sp. nov. TYPE: Guatemala. Alta Verapaz: Sacté, large tree in dense humid forest, 900–1,050 m (fl), *I. Kunkel 7* (holotype, BR). Figure 2.

Arbor magna. Ramuli obtuse angulati, glabri. Folia alterna, glabra, chartacea, elliptica, 25–40 × 11–15 cm. Inflorescentiae e axillis bractearum ortae, breviter cinereo-pubescentes. Bracteae glabrae, nigrescentes, 1–1.5 cm longae. Flores 3–4 mm longi, 2.5–3 mm lati, urceolati, sparsim cinereo-puberuli. Tepala 6, inaequalia, 3 exteriora contingentia, 3 interiora minoria, magnopere tepalis exterioribus occulta. Stamina fertilia 3, 2-locellata, 2 glandulis basalibus munita, staminodia 9, 6 exteriora late lanceolata, ad 1 mm longa, 3 interiora lanceolata, ad 0.8 mm longa, staminibus

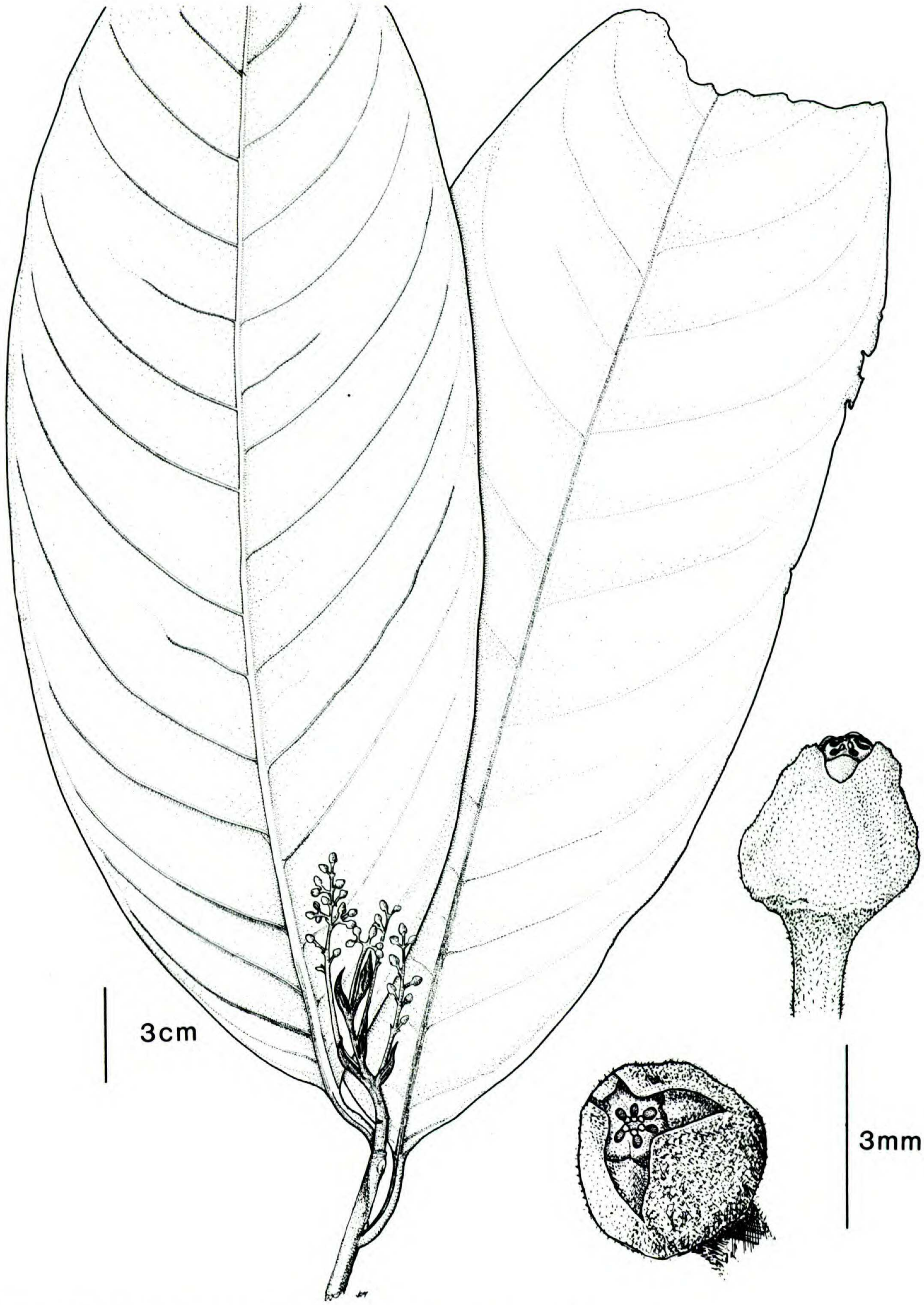

FIGURE 2. *Licaria bracteata*. Habit and flower seen from aside and above.

alternantia. Ovarium glabrum, tubo florale dense pubescente. Fructus ignoti.

Large tree. Twigs roundly angled, glabrous, with small, light-colored lenticels, the terminal bud drying black, glabrous. Leaves alternate, chartaceous, glabrous on both surfaces (only a small part of the lower leaf surface visible on specimens seen), elliptic, the apex not seen, the base acute, 25–40 × 11–15 cm, the upper surface opaque, the midvein and lateral veins (11–15 pairs) sunken, the tertiary venation slightly raised, the lower surface opaque, with midvein, lateral veins, and tertiary venation raised. Inflorescences in the axils of bracts, these ultimately deciduous but present in young inflorescences, up to 5 cm long, very short grey-pubescent, with 10–20 flowers per inflorescence. Inflorescences inserted near the tips of the twigs above the leaves or along short, leafless spurs in the axils of persistent leaves. Bracts at bases of inflorescences black, glabrous, 1–1.5 cm long. Flowers 3–4 mm long, 2.5–3 mm wide, sparsely grey-puberulous, urn-shaped, abruptly widened at the base and gradually narrowed towards the tip. Tepals 6, erect or somewhat incurved, unequal, the outer 3 triangulate, ca. 1 mm long, touching each other and largely obscuring the inner 3 tepals, these ca. 0.6 mm long, 1.1 mm wide. Fertile stamens 3, ca. 1.4 mm long, each with 2 basal glands, 2-celled, the anther cells small, apical, opening towards the centers of the flowers. Staminodia 9, the outer 6 broadly lanceolate, ca. 1 mm long, the inner 3 lanceolate, alternating with the 3 fertile stamens, ca. 0.8 mm long, occasionally with minute anther cells. Ovary glabrous, the floral tube densely pubescent inside. Fruit unknown.

Additional specimen examined. GUATEMALA. ALTA VERAPAZ: Sacté, large tree in dense humid forest, 900–1,050 m (fl), *I. Kunkel 56* (MO).

In Kurz's treatment (1983) *L. bracteata* keys to the subgenus *Guianensis* (correctly: subg. *Licaria,* because it includes the type species of the genus) and within this subgenus to a small group of three Central American and West Indian species with unequal tepals. However, these species (*L. cubensis, L. urceolata* and *L. peckii*) have much smaller leaves, smaller flowers, fewer staminodia, and (with the exception of *L. urceolata*) pubescence on leaves and/or twigs. *Licaria urceolata,* which has glabrous leaves and twigs, lacks the pubescence of *L. bracteata* on the inflorescence. *Licaria bracteata* is an unusual species because of its large, rather persistent bracts, large flowers, and, uniquely in subg. *Licaria,* the presence of nine staminodia.

That Mrs. Kunkel-Westphal, who was not trained as a botanist, collected two interesting new species of Lauraceae in Guatemala, is both a compliment to her qualities as a collector and an indication that many surprises await the collector of large tropical trees.

PHOEBE NEES

A good set of characters to separate the genus *Ocotea* from *Phoebe* has unfortunately not yet been found. *Ocotea* is a particularly large and vaguely defined genus which includes various assemblages of species. *Phoebe* likewise is poorly understood. In the New World there are two main centers of *Phoebe* species: one in northern Central America and one in central-southern Brazil. In the intervening areas *Phoebe* is very poorly represented, and it is not clear yet whether the Brazilian and Central American species form a monophyletic group. An added difficulty is that the type of *Phoebe* is an Asian species and that, according to Kostermans (1961), the Asian *Phoebe* species are not congeneric with the neotropical *Phoebe* species. Kostermans (1961) transferred all neotropical *Phoebe* species to *Cinnamonum,* an Asian genus generally not considered native to the Neotropics. He did not discuss the difficulties in separating *Ocotea* from *Phoebe,* nor the heterogeneous assemblage of species classified in neotropical *Phoebe.*

Earlier authors relied on two characters to separate *Ocotea* from *Phoebe.* In *Ocotea* the staminodes were said to be inconspicuous, in *Phoebe* conspicuous; in *Ocotea* the tepals do not persist in the fruiting stage and a cupule is present, while in *Phoebe* tepals harden and persist in fruit, but no cupule is present. The staminodial character is relative and difficult to interpret. Because flowers of *Ocotea* and *Phoebe* are small and the staminodes almost never exceed 1 mm, one may rightly ask what makes minute staminodes conspicuous in some flowers and inconspicuous in others. Besides, the presence of staminodes is not constant for *Phoebe helicterifolia* (W. Burger, pers. comm.). The presence of persistent tepals in fruit is also a doubtful character. Of the 18 Central American species attributed to *Phoebe* for which I have data, only five have persistent tepals in fruit. However, fruits are unknown for several species. Cupule development in *Ocotea* is very variable and ranges from a widened pedicel with

a minute cupule to well-developed cups. Placement of new taxa in *Ocotea* or *Phoebe* has been subjective and will remain so until *Cinnamomum, Ocotea, Phoebe,* and their satellite groups are studied critically.

I use the following characters as indicators for *Phoebe*: tepals erect in flower and persistent in fruit, flowers with relatively long pedicels, staminodes present, and a tendency toward tripliveined leaves. Because the new species has four of the five characters, I place it in *Phoebe*.

Using these indicator characters for *Phoebe,* species such as *P. helicterifolia* (of which *Nectandra corzoana* Lundell is a synonym) and its allies [*P. bourgeauviana* (of which *Ocotea tenejapensis* Lundell is a synonym), *P. obtusata, P. valeriana, Nectandra capituliforma,* and *N. longicuspis*] would be excluded from *Phoebe*. These species should all be placed in the same genus, probably in the already variable *Ocotea,* or, if future study turns up additional characters, in a new genus.

Phoebe glabra van der Werff, sp. nov. TYPE: Mexico. Oaxaca: Municipio Matías Romero, tree, 13 m, *Wendt et al. 4813* (holotype, MO). Figure 3.

Arbor, ad 13 m. Ramuli glabri, teretes. Gemma terminalis glabra. Folia glabra, alterna, chartacea, basi acuta vel rotundata, apice acuminata, reticulatione elevata, axillis nervorum basalium domatiis cavitatibus instructis. Inflorescentiae glabrae, in axillis foliorum vel bractearum deciduarum; flores glabri, ad 3 mm longi, pedicellis 2–3 mm longis; tepala 6, aequalia, ovata, antheris 4-locellatis. Ovarium glabrum, globosum, ca. 1.8 mm longum. Staminodia 3, ca. 0.9 mm longa. Fructus ellipsoideus, 2 cm longus, cupula plana margine integra pedunculo incrassato.

Tree, 8–13 m. Twigs terete, slender, glabrous. Terminal bud glabrous. Leaves chartaceous, alternate, the apex acuminate, the base acute or somewhat rounded, elliptic, 12–16 × 4–6 cm; lateral veins 3–5 pairs, the lowest pair most strongly developed and with slitlike domatia in the axils, these visible as small lumps on the upper surface; veins and reticulation prominently raised on both surfaces; petioles to 1.5 cm long, glabrous. Inflorescences paniculate, glabrous, 5–10 cm long, in the axils of persistent leaves or deciduous bracts, often appearing terminal. Pedicels glabrous, 2–3 mm long. Flowers glabrous, 2.5–3 mm long, funnel-shaped. Tepals 6, equal, ca. 1 mm long, ovate. Stamens 9, all 4-celled, the filaments narrower than the anthers, 1.3–1.4 mm long, glabrous; outer 6 anthers with cells introrse, inner 3 with cells extrorse. Staminodia 3, ca. 0.9 mm long. Ovary globose, glabrous, ca. 1.8 mm long; style short, ca. 0.5 mm long. Fruit an ellipsoid berry, 2 cm long, cupule platelike, the margin entire, 1.4 cm wide, peduncle gradually widened towards the fruit.

Additional specimens examined. MEXICO. VERACRUZ: Municipio Minatitlán, *Wendt et al. 3217* (MO); Municipio Hidalgotitlán, *Wendt et al. 3141* (MO). OAXACA: Municipio Matías Romero, *Wendt et al. 3064* (MO).

Phoebe glabra is closely related to *Ocotea euvenosa* Lundell. Both species have twigs, leaves, and flowers glabrous, raised reticulation, and slitlike domatia (these were not mentioned by Lundell (1965), but the GH isotype of *O. euvenosa* shows the domatia clearly). *Ocotea euvenosa* differs in its larger leaves, laxer reticulation (even a small leaf of *O. euvenosa,* of comparable size to a regular leaf of *Phoebe glabra,* has a laxer reticulation), and in its pinnately veined leaves, not subtripliveined as in *P. glabra*. The type of *O. euvenosa* is in young fruiting stage, which makes comparison difficult. In the fruiting stage the pedicels become much larger, to 2.5 cm long and I therefore attach little taxonomic value to the longer pedicels reported by Lundell (1965) for *O. euvenosa*. Three of the four collections of *P. glabra* come from limestone-derived soils.

PLEUROTHYRIUM NEES

The genus *Pleurothyrium* is separated from the other neotropical lauraceous genera by a set of characteristics associated with strong enlargement of the staminal glands. Each of the filaments of the inner three anthers carries two glands, which, in other genera, are roundish and rather small. There is no doubt these glands produce nectar. In the genus *Pleurothyrium* these glands become strongly enlarged and grow outward between the outer six stamens. In the related genera *Ocotea* and *Nectandra* the outer stamens usually form a tight ring, with the anthers touching each other. The anther cells of the outer stamens in these genera are all introrse; lateral cells are not possible because the anthers form such a tight ring. However, in *Pleurothyrium* the stamens are separated from each other by the outgrowing staminal glands and the stamens stand rather isolated. There are no spatial constraints against lateral cells on the anthers, and indeed one characteristic of *Pleurothyrium* is that the lower pair of cells on the six outer anthers is laterally positioned.

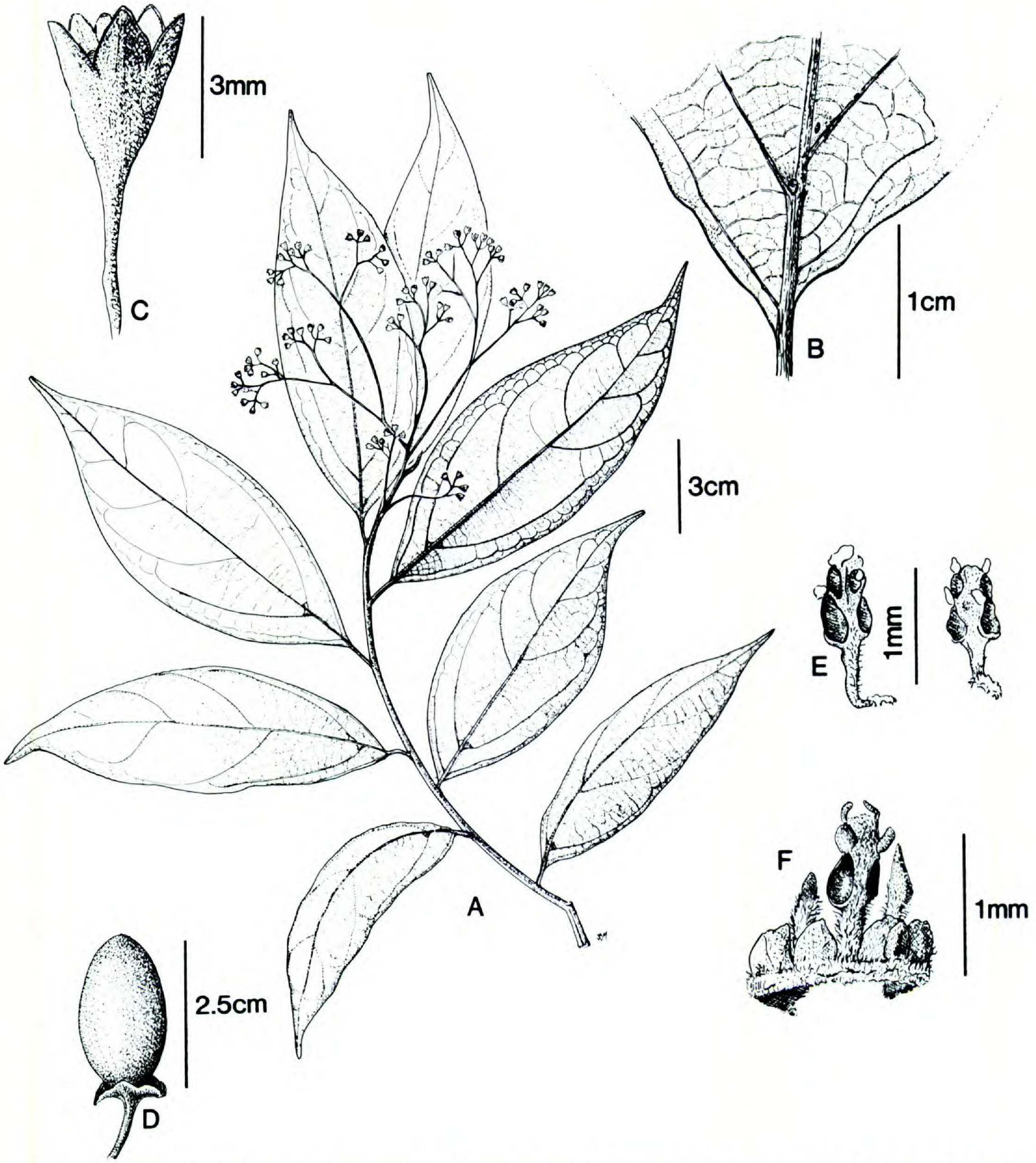

FIGURE 3. *Phoebe glabra*.—A. Habit.—B. Leaf base showing domatia.—C. Flower.—D. Fruit.—E. Two outer stamens.—F. Basally united inner anther, glands, and two staminodia.

A second characteristic of *Pleurothyrium* is that in many species the staminal glands become fused into a ring at the margin of the flower or even form a cushionlike glandular mass with only the anthers and the pistil protruding. This glandular mass has been called a disc by some authors (Hutchinson, 1964). Sometimes one can still discern that the glandular mass is the result of fusion of six glands, and reports that in *Pleurothyrium* nine stamens have two glands each are erroneous, as Rohwer & Kubitzki (1985) pointed out.

Additional characteristics for *Pleurothyrium* are the relatively large, warty cupules, distinctly larger than in most *Ocotea* and *Nectandra* species and quite like the cupules in *Aniba*. The leaves have many lateral veins for their size, a character that, in addition to the large cupules, makes identification of fruiting material possible. Several

Pleurothyrium species also have hollow twigs, which are frequently inhabited by ants.

I noticed in several species that the margins of the tepals are thinner than the centers and that in old flowers the margins of the tepals curl downward and become revolute. I have not seen this in other neotropical Lauraceae.

Pleurothyrium costanense van der Werff, sp. nov. TYPE: Venezuela. Edo. Falcón: Sierra de San Luis, above La Chapa, 1,200 m, 10 Aug. 1979, *van der Werff 3654* (holotype, U; isotype, CORO). Figure 4.

Arbor, 15–20 m. Ramuli teretes, dense ferrugineo-pubescentes. Folia alterna, chartacea, elliptica vel late elliptica, apice rotundata vel breviter acuta, basi obtusa vel acuta, 20–35 × 8–17 cm. Venatio super immersa, subtus elevata reticulatione conspicua. Inflorescentiae axillares, pubescentia ferruginea, 10–15 cm longae. Tepala 6, aequalia, patentia, elliptica. Stamina 9, 4-locellata, 3 interiora locellis extrorsis, 6 exteriora locellis inferioribus lateralibus, locellis superioribus introrsis. Stylum crassum dense pubescens. Glandulae staminium in muro humile connatae, staminibus gynoecioque in centro exposito. Cupula magna, verrucata.

Tree, 15–20 m. Twigs more or less terete, densely ferruginous pubescent, glabrescent with age. Terminal bud densely ferruginous pubescent. Leaves alternate; laminae chartaceous, elliptic or broadly elliptic, the apex rounded or shortly acute, the base obtuse or acute, 20–35 × 8–17 cm; with upper surface opaque, the venation sunken, glabrous except for some pubescence on midvein and main lateral veins; lower surface with raised midvein, lateral veins, and reticulate venation, the midvein and lateral veins with brown pubescence, otherwise with spreading hairs in flowering stage, but glabrous when fruiting; lateral veins 10–15 pairs, the veins arching upwards near the margin and becoming connected with the superior vein; petioles 2–3 cm long, ferruginous pubescent. Inflorescences in axils of deciduous or persisting leaves, 10–15 cm long, ferruginous-pubescent, rather laxly flowered. Flowers white or buff, ca. 1 cm diam. Tepals 6, equal, spreading at anthesis, the outer 3 ferruginous-pubescent outside, the inner 3 puberulous outside except for a narrow, median, pubescent strip, puberulous inside, elliptic, ca. 4 mm long. Stamens 9, all 4-celled, the inner 3 with extrorse cells, the outer 6 with the lower cells lateral, the upper ones introrse. Staminal glands fused into a low wall surrounding the stamens and gynoecium. Style short, stout, densely grey pubescent; stigma flat, about as wide as the style, glabrous; ovary glabrous. Flowering in August. Cupule large, ca. 2 cm high when pressed, conspicuously warty.

Additional specimens examined. VENEZUELA. SUCRE: Peninsula de Paria, Cerro Espejo (fl.), *Steyermark & Rabe 96072* (US, VEN). MONAGAS: Yucucual, E of Caripe (fr.), *Lao 10* (MO).

Pleurothyrium costanense is known from three collections in the Cordillera de La Costa and the Sierra de San Luis, in northern Venezuela. Diagnostic characters are the reticulate venation of the leaves, the broad leaves, and the ferruginous pubescence. The only other *Pleurothyrium* species in northern Venezuela are *P. reflexum* Lasser and *P. zulianense* Lasser (these two names represent the same species, for which I have used the name *P. zulianense* Lasser). *Pleurothyrium zulianense* differs in the lack of reticulate venation, in having narrower leaves and smaller flowers, and in the absence of dense ferruginous pubescence.

The epithet *costanense* refers to the Cordillera de La Costa, where this species is found.

Pleurothyrium grandiflorum van der Werff, sp. nov. TYPE: Colombia. Chocó: Rio Mecana, 5–10 m. Tree, 15 m, along river. Flowers yellow, with pleasant but strange fragrance (as in some euglossine bee-pollinated flowers), *A. Juncosa 1675* (holotype, MO; isotypes to be distributed). Figure 5.

Arbor, 15 m. Ramuli teretes dense breviter pubescentes. Folia elliptica, 15–25 × 4–7 cm, membranacea, glabra, apice acuta, basi argute acuta vel decurrente. Inflorescentiae ad 10 cm longae, pauciflorae, e foliorum deciduorum axillis ortae. Flores magni, 1.5–1.7 cm diametro, flavi, fragrantes. Tepala 6, patentia, 6–7 mm longa, subaequalia; tepala exteriora late elliptica, tepala interiora angustiora, dense breviter pubescentia. Stamina 9, 4-locellata, 3 interiora locellis extrorsis, 6 exteriora 2 locellis inferioribus lateralibus, 2 locellis superioribus laterali-introrsis. Glandulae staminium in muro connatae, staminibus styloque in centro expositis. Fructus ignoti.

Tree, 15 m. Twigs more or less terete, slender, with dense, short, brown pubescence, this velvety-shiny on the terminal bud. Leaves elliptic, 15–25 × 4–7 cm; laminae membranaceous, glabrous on both surfaces, but midvein with some pubescence on lower surface, the apex acute, the base sharply acute or decurrent on the petiole; lateral veins 15–20, departing from the midvein at angles of almost 90°, scarcely or not at all decurrent along the midvein, the venation sunken above, slightly raised on lower surface; petioles 1–1.5 cm long, canaliculate, with same pu-

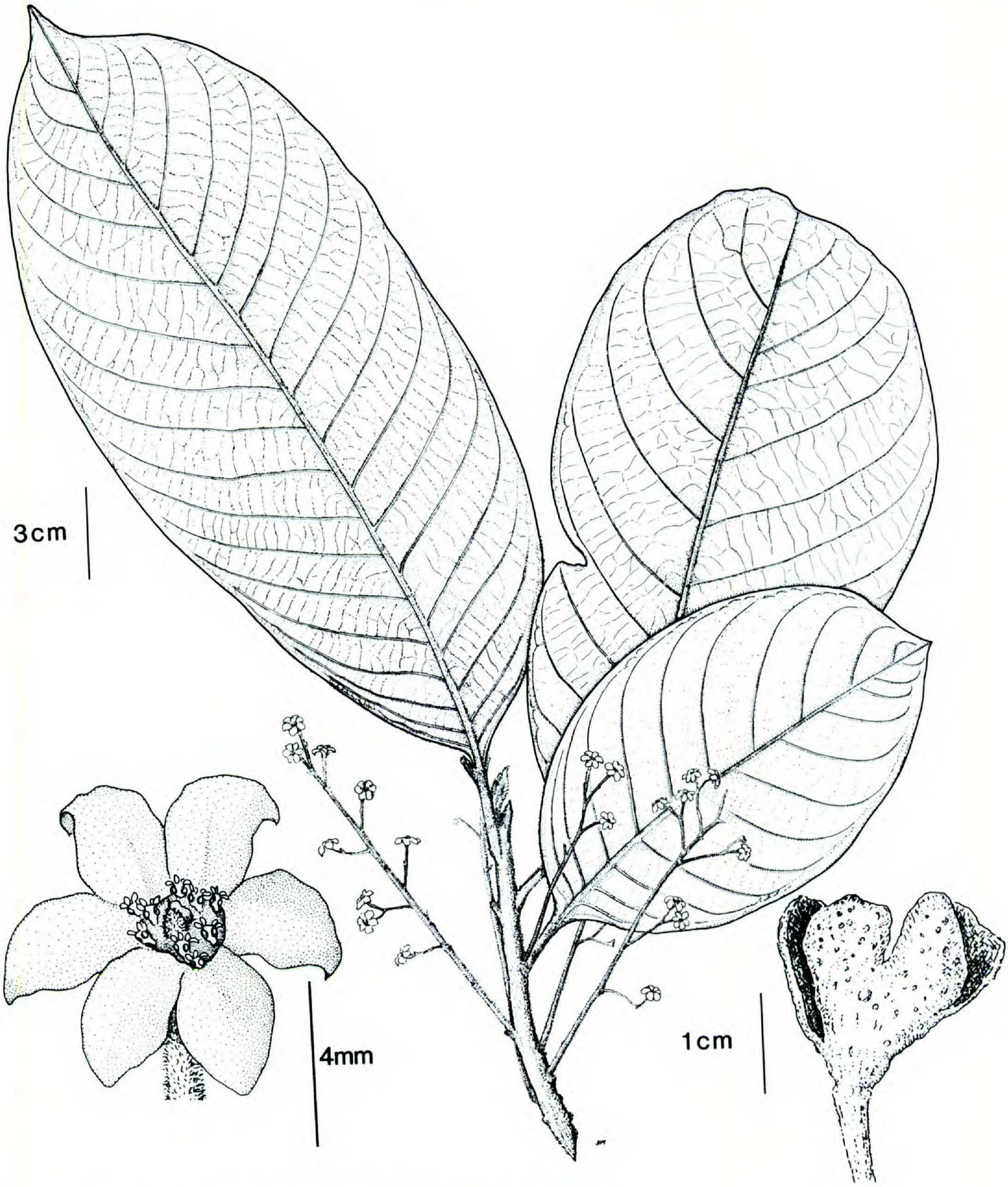

FIGURE 4. *Pleurothyrium costanense.* Habit, flower, and cupule.

bescence as twigs. Inflorescences to 10 cm long, inserted in axils of deciduous leaves below the leafy apices of the twigs, with same pubescence as twigs, few-flowered (only 2 or 3 flowers present on each inflorescence, but with scars indicating former presence of more buds); peduncles ca. 5 mm long, with same pubescence as flowers. Flowers very large for the family, 1.5–1.7 cm diam., yellow, fragrant, densely short brown pubescent, the tube 2–3 mm long. Tepals 6, spreading, 6–7 mm long, subequal; the outer 3 broadly elliptic, the inner 3 narrower, especially near the base, all with dense, short pubescence on the inner surface. Fertile stamens 9, all 4-celled, the inner 3 extrorse, the outer 6 with the lower pair of anther cells lateral, the upper pair lateral-introrse; anthers glabrous. Staminal glands forming a large wall surrounding the stamens or seem-

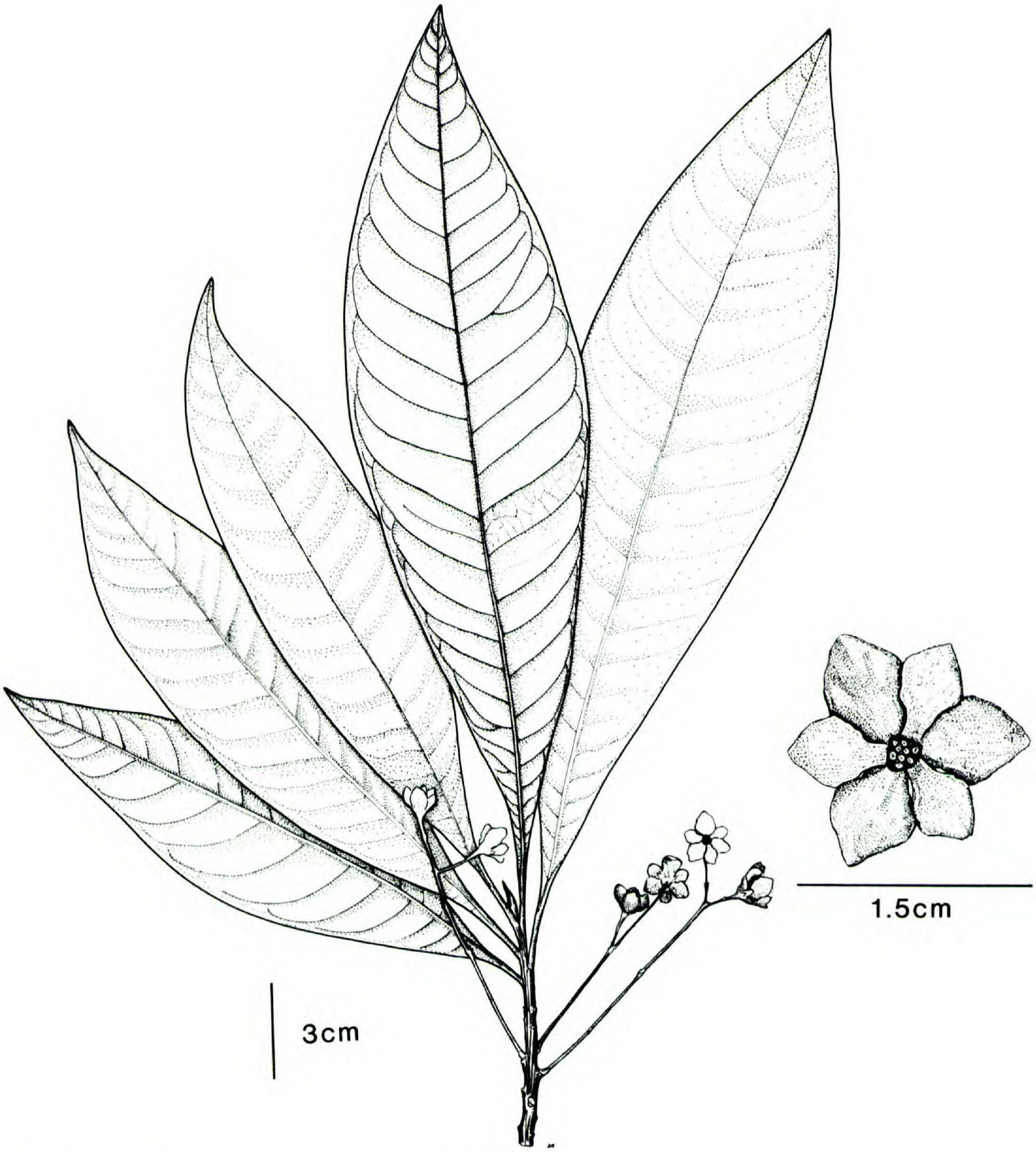

FIGURE 5. *Pleurothyrium grandiflorum*. Habit and flower.

ingly covering the stamens in very young flowers. Stigma platelike, ca. 0.3 mm diam., of almost same color and texture as the anthers. Fruit unknown.

Pleurothyrium grandiflorum is known only from the type collection made in the Chocó area, Colombia, an area rich in endemics. The species is very distinct in its large flowers and few-flowered inflorescences. In contrast to most Lauraceae, the lateral veins are hardly or not at all decurrent along the midrib.

Pleurothyrium westphalii van der Werff, sp. nov.

TYPE: Guatemala. Alta Verapaz: Sacté. Tree in dense, humid forest, 20 Apr. 1976, *I. Kunkel 9* (holotype, BR). Figure 6.

Arbor, 20 m. Ramuli glabri, juvenales hinnulei pubescentes. Folia alterna, elliptica, apice acuta, basi acuta, basi acuta vel decurrenti, membranacea, glabra. Inflorescentiae ad 8 cm longae, parviflorae, pubescentia hinnulea, e foliorum vel bractearum deciduarum axillis ortae. Tepala 6, aequalia, patentia sub anthesim, pubescentia hinnulea. Stamina 9, 4-locellata, 3 interiora locellis extrorsis, 6 exteriora 2 locellis inferioribus la-

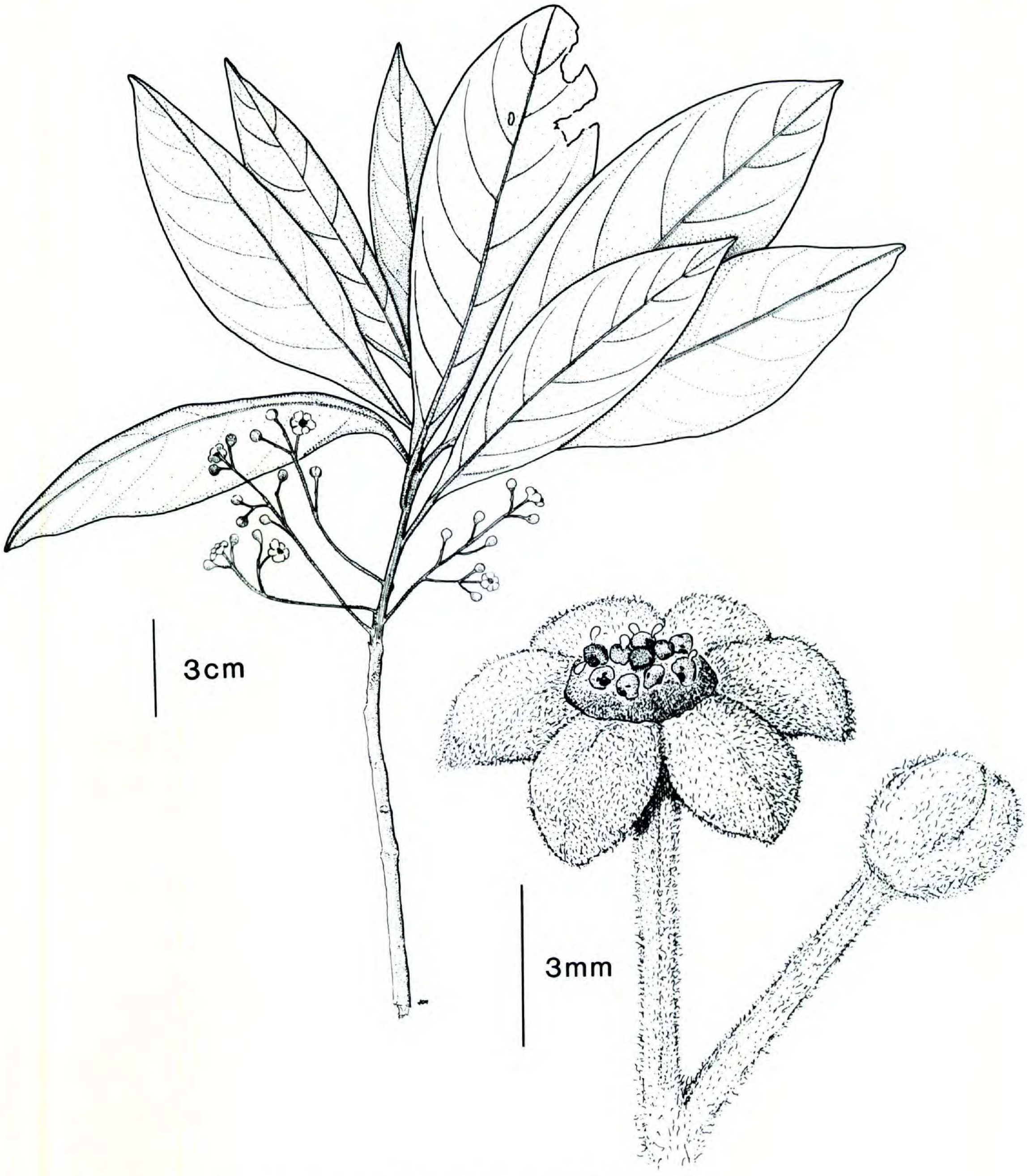

FIGURE 6. *Pleurothyrium westphalii*. Habit and flower with bud.

teralibus, 2 locellis superioribus introrsis. Glandulae staminium in muro connatae staminibus styloque in centro expositis. Fructus ignoti.

Tree, to 20 m. Older twigs glabrous, young twigs with brown, dense, short pubescence. Leaves elliptic, the apex acute, the base sharply acute or somewhat decurrent along petiole, membranaceous, 15–20 × 4–7 cm, glabrous or nearly so above, with some appressed pubescence, especially near base, but glabrescent with age below; lateral veins 5–8, fading out near the margin, not looping upward and not connected with other lateral veins; upper leaf surface dark, dull, venation sunken; midvein, secondary, and tertiary venation slightly elevated; petioles to 1 cm long, pubescent as the young twigs. Inflorescences ca. 8 cm long, densely grey-brown pubescent, few-flowered (fewer than 10 flowers per

inflorescence), in the axils of deciduous leaves or bracts on the young twigs but attached below the leaves, narrowly pyramidate. Flowers with 6 equal tepals, these spreading or slightly reflexed at anthesis, densely short tomentose outside, slightly less so inside, the tepals ovate, ca. 4 mm long. Fertile stamens 9, all 4-celled, the inner 3 extrorse, the outer 6 with the lower two cells lateral, the upper two cells introrse. Anthers glabrous, staminal glands not individually visible, but fused into circular mass ca. 3 mm in diam. with the anthers and pistil protruding in the middle. Pistil platelike, gray. Fruit unknown.

Additional specimens examined. GUATEMALA. ALTA VERAPAZ: Sacté, *Kunkel 17* (fl.) (MO), *298* (sterile) (BR).

Pleurothyrium westphalii is the northernmost species of its genus and is known only from one locality in Guatemala. Two other *Pleurothyrium* species, as yet undescribed and under study by W. Burger, are known from Central America. The species represented by *Allen 5885* (GH, US) from Costa Rica differs in having leaves with acuminate apices, persistent bracts in the inflorescence, leaf bases acute but not decurrent, and the inner surfaces of the tepals papillose-puberulous, not pubescent. The leaves of *Allen 5885* also have more lateral veins which arch upward and become connected, forming almost a marginal vein, as is often seen in *Pleurothyrium* species. The second species, represented by *Bunting & Licht 872* (NY) from the Río San Juan area, Nicaragua, differs in having a many-flowered inflorescence (20–30 flowers per inflorescence), darker pubescence, and the staminal glands not fused into a large wall as in *P. westphalii.*

This species is named after the collector, Irene Kunkel, née Westphal, who collected two new and very interesting species of Lauraceae in Guatemala.

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